

AMENDMENTS TO THE CLAIMS

Claims 1-7 (Cancelled)

Claim 8 (New) An image processing apparatus comprising:

an image storage unit operable to store an image as a plurality of lines, each line having a plurality of pieces of pixel data sequentially arranged;

a first reading out unit operable to sequentially read out, from said image storage unit, the plurality of pieces of pixel data of each line of the plurality of lines and operable to sequentially output the plurality of pieces of pixel data sequentially read out;

a second reading out unit operable to read out one or more pieces of pixel data located at a head of each line of the plurality of lines and operable to output the one or more pieces of pixel data read out; and

an arithmetic unit operable to execute an arithmetic process for generating output pixel data using the pixel data output from said first reading out unit and said second reading out unit, wherein:

before said arithmetic unit completes the arithmetic process for generating a last output pixel data for one of the plurality of lines using the pixel data output from said first reading out unit, said second reading out unit is operable to read out the one or more pieces of the pixel data located at the head of a next line; and

said arithmetic unit is operable to use the pixel data output from said second reading out unit when executing the arithmetic process for generating a first output pixel data for the next line.

Claim 9 (New) The image processing apparatus of claim 8, wherein said first reading out unit further comprises:

a line memory operable to store at least the plurality of pieces of the pixel data belonging to one line of the plurality of lines; and

a plurality of registers operable to store the sequentially arranged plurality of pieces of pixel data by sequential shifting.

Claim 10 (New) An image processing method comprising:

sequentially reading out a plurality of pieces of pixel data from each line of a plurality of lines from an image storage unit, using a first reading out unit and a second reading out unit, the image storage unit storing an image as the plurality of lines, each line having the plurality of pieces of pixel data sequentially arranged, and sequentially outputting the pieces of pixel data read out by said sequentially reading out; and

executing an arithmetic process using an arithmetic unit by generating output pixel data using the pieces of pixel data output from said outputting of the pieces of pixel data, wherein:

before said executing of the arithmetic process generates a last output pixel data for one of the lines using the pixel data output from the first reading out unit, said sequentially reading out using the second reading out unit includes reading out one or more pieces of the pixel data located at a head of a next line; and

said executing of the arithmetic process includes generating a first output pixel data for the next line by using the arithmetic unit to generate the first output pixel data using the pixel data output from the second reading out unit.

Claim 11 (New) The image processing method of claim 10 further comprising:

storing, in a line memory of the first reading out unit, at least the plurality of pieces of the pixel data belonging to one line of the plurality of lines; and

storing, in a plurality of registers of the first reading out unit, the sequentially arranged pieces of pixel data by sequential shifting.